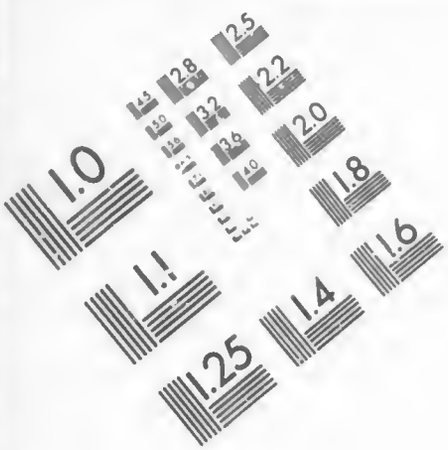

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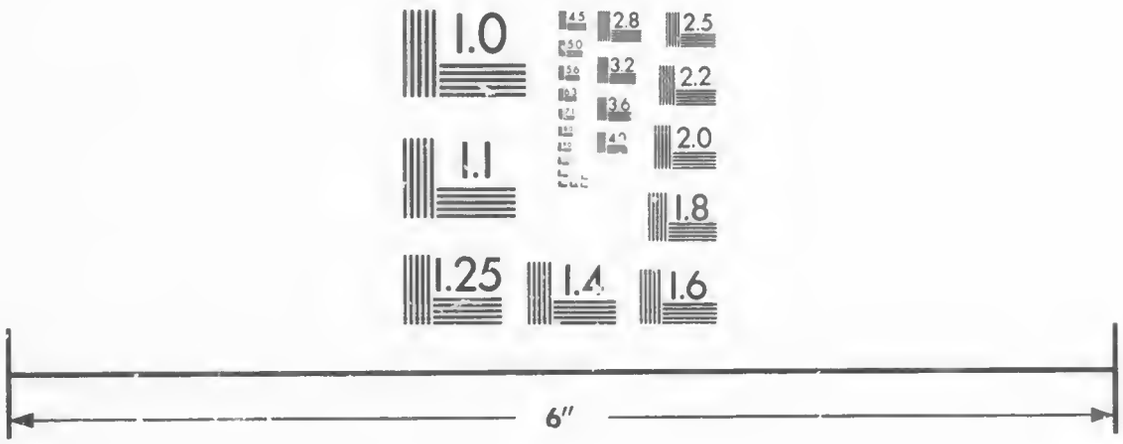

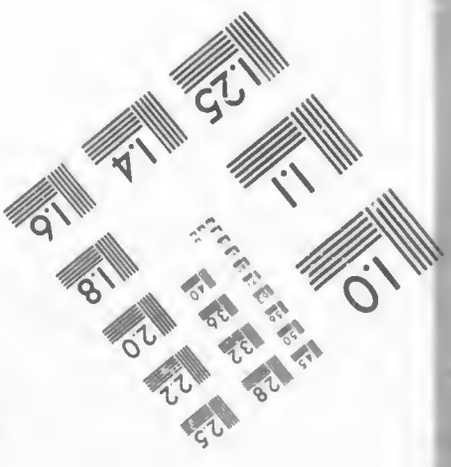

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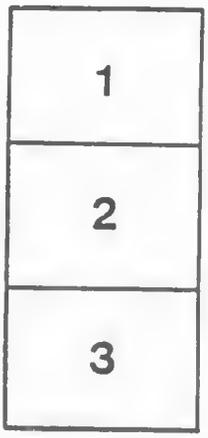

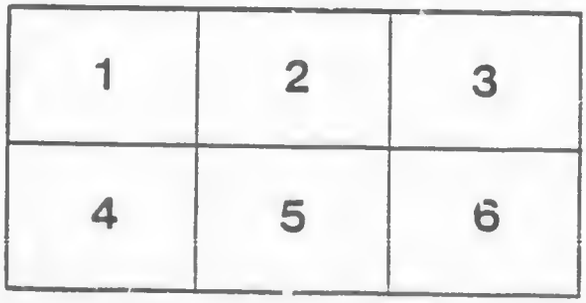

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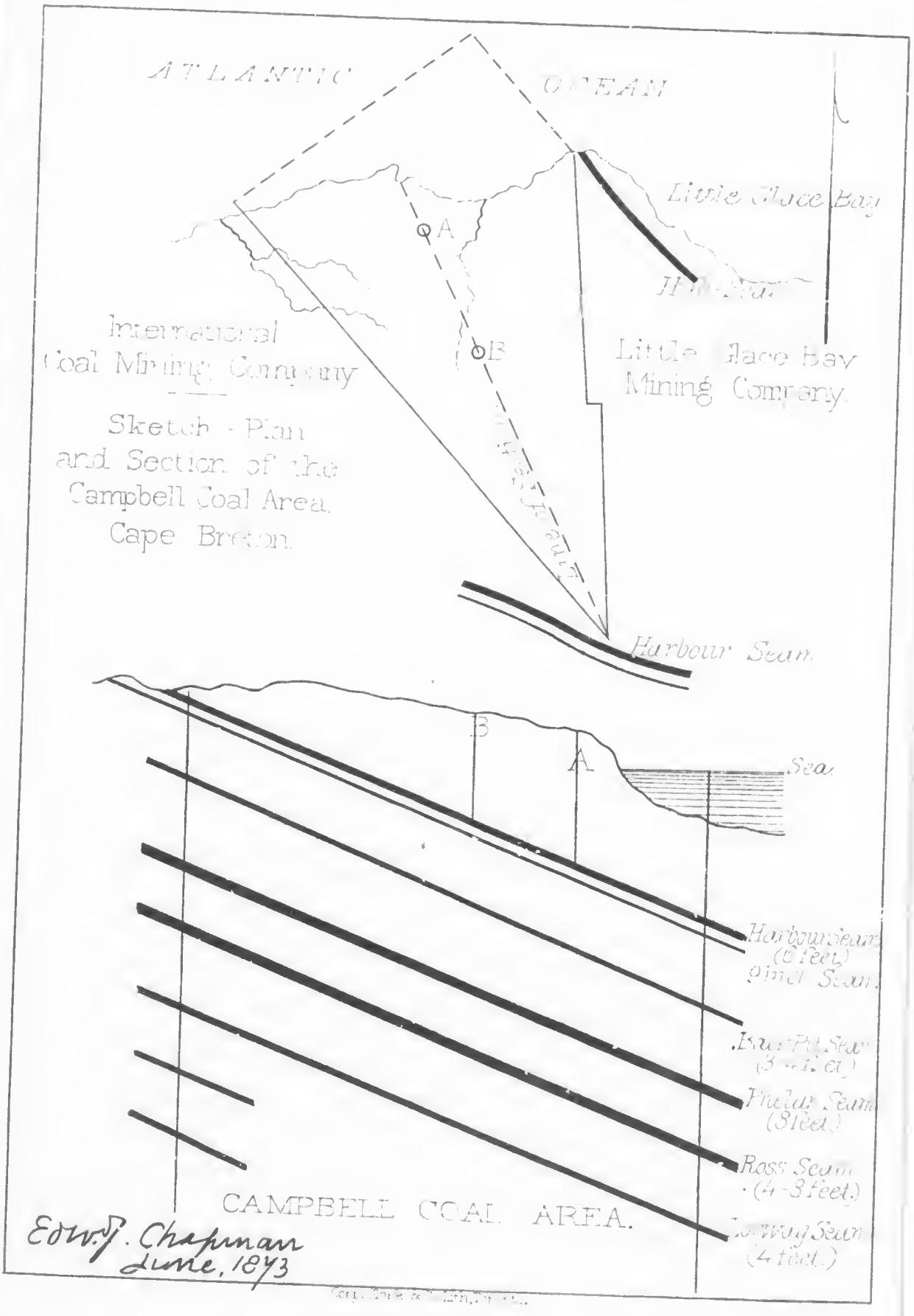
ATLANTIC OCEAN
Little Glace Bay
A
B
International Coal Mining Company
Little Glace Bay Mining Company
Sketch - Plan and Section of the Campbell Coal Area, Cape Breton.
Harbour Seam
B
A
Sea
Harbour seam (5 feet)
Pinch Seam
Phelan Seam (8 feet)
Ross Seam (4-3 feet)
(4 feet)
CAMPBELL COAL AREA.
Edw.J. Chapman
June, 1873

PRELIMINARY REPORT

ON THE

CAMPBELL COAL AREA,

CAPE BRETON.

To the Hon. John Beverley Robinson, M.P., &c. &c.

SIR,

Having received your instructions to furnish you with an impartial Report on the coal property known as the Campbell Coal Area in Cape Breton (Nova Scotia), I visited the ground at the close of last month (June, 1873), and I have now the honour to offer a condensed statement of the results of my examination.

1. *Site and general description of the property.*—The Camp- Coal Area forms a triangular piece of ground of one square mile or 640 acres in extent, situated on the north-east coast of Cape Breton, immediately west of Little Glace Bay. It is bounded on the east by the coal property of the LITTLE GLACE BAY MINING COMPANY, and on the west by that of the INTERNATIONAL COAL MINING COMPANY, on both of which properties extensive mining operations are now being carried on. The northern limit of the claim, so far as regards the land, extends along the coast for rather more than three-fourths of a mile, but the actual boundary of the claim in this direction runs for some considerable distance beneath the sea-level. As shewn by the workings at the Victoria and other

mines in Cape Breton, submarine coal extensions of this kind admit of being worked without the slightest difficulty or inconvenience. The ground of the Campbell claim rises somewhat abruptly above the sea-line to a height of about 30 feet, and then forms a series of gradual ascents to the southern limit of the property, where the rise above the sea-level is about 150 feet. The property is within a mile of Little Glace Bay Harbour, and is distant from Sydney about 13 miles. It is easily reached from the latter town by the railway of the International Company, which runs within two miles of the ground. The entrance to Sydney harbour is about ten miles to the west, and the winter port of Louisburg, to which a railway from Sydney is now in course of construction, lies about twenty miles to the south-east.

2. *Coal seams underlying the Campbell Area.*—On the surface of this property there are no actual outcrops of coal, but the well-known HARBOUR SEAM crops out about a chain's length south of the property, and passes under the entire area. This seam has an average thickness of at least 6 feet feet, rising in places to 6 feet 6 inches, and its coal is a bituminous coal of very excellent quality, as shewn by the analysis given below. The Harbour seam is now being largely worked at the adjoining International and Little Glace Bay Mines. In addition to this seam, all the seams underlying the mining areas of the above companies—the "Hub" seam of the Glace Bay Company alone excepted—pass entirely under the Campbell area. This statement admits of no possible doubt. The principal of these seams (shewn, with others, in the section accompanying this Report), comprise the Phelan seam of 8 feet in thickness, the Ross seam ranging from 5 to 8 feet, and the Lorway seam of 4 feet. Practically, however, the real importance of the property depends upon the easily accessible Harbour seam. This has a northerly dip or underlie of about 5½ degrees, equal to about 1 in 10; but it will probably flatten somewhat at lower depths, and may thus be reached at a lesser depth

from the surface than the above underlie would indicate. The seam at the extreme southern point of the property lies at a depth of about 75 feet; and near the coast line or more northern limit of the area, the ground failing gradually in that direction, it would be reached at a vertical depth of from 480 to 600 feet, according to the position of the shaft.

The average specific gravity of a sample of the Harbour coal taking from the workings at the International pit, is equal, I find, to 1·272. A cubic foot of the coal will weigh, consequently, 79¼ lbs., and a ton of 2,240 lbs. will contain 28 cubic feet. As the Harbour seam averages at least 6 feet in thickness, it must contain within the limits of the Campbell Area 6,105,600 tons. Allowing largely for pillars and loss, about one-third of this, or upwards of two millions of tons, would be immediately available. To exhaust this amount at an ordinary output of fifty or sixty thousand tons, would require a period of from thirty to forty years; and the coal pillars would then furnish an equal supply for a still longer period.

3. *Quality of the Coal:*—As stated above, the coal of the Harbour seem is a bituminous caking coal of very good quality. A representative sample taken personally from the workings at the International pit, at a depth of rather more than 100 feet from the surface, gave me the following results:—

Moisture	0.87
Volatile Combustible Matter	35.41
Fixed Carbon	58.56
Sulphur	trace only.
Ash	5.16

I could not detect any signs of pyrites in the sample from which the above analysis was made. The trace of sulphur found in it was probably due, therefore, to the presence of a minute amount of sulphate of lime. When underground, I examined very carefully with my lamp the sides of many of the pillars, and the fragments of coal thrown down in the workings; and although I perceived here and there a few

specks and thin strings of pyrites, the quantity, I may safely say, from a good deal of experience in examinations of this kind, was decidedly below the ordinary average. The ash in this coal, as indeed in most of the Cape Breton coals, is also of comparatively small amount. The coke derived from the coal forms agglutinated masses of a mammillated semi-metallic aspect.

4. *System of winning or mining the Coal.*—In all the Cape Breton pits the coal is mined after the pillar and stall system, no long wall excavations having been as yet attempted. Where adits are not available, as on the ground now under review, the coal in these inclined seams may be obtained either by sinking near the outcrop of seam and working downwards, the plan too commonly followed; or, more judiciously, by carrying town the shaft at a distance from the outcrop, in the direction of the dip, so as to strike the seam at a considerable depth, and thus work upwards. The first method has the temporary advantage of reaching the coal quickly and cheaply; but the deep method, or "working from the deep," as it is termed, is far more economical in the end, as the coal is got out and raised more easily and with less waste, and the drainage of the mine is greatly facilitated. If this plan be adopted on the Campbell Area, a shaft sunk at or near the spot marked A in the accompanying sketch-plan would reach the coal at a depth of from 480 to 500 feet, and would enable about two-thirds of the seam to be worked out on the up-hill principle. To save time and expense, however, in the first instance, a shaft might be put down at B. This would strike coal at a depth of 220 or 230 feet, but, owing to the triangular shape of the property, the coal on the rise in front of it would only comprise about a third of the seam. Still, even this would amount (exclusive of pillars to be removed afterwards, and of unavoidable loss from waste) to upwards of 700,000 tons. Both the floor and roof of this Harbour seam, judging from their exposure in the International and other pits, appear to be of a very solid character

5. *Shipping facilities.*—The coal from the Campbell Area could be shipped either from the harbour of the Little Glace Bay Company, or from the loading ground of the International Company at Sydney. If shipped from the former, a tramway of about half a mile in length would have to be constructed; but the harbour of the Little Glace Bay Company will not at present admit vessels of more than seventeen feet draught. The Company, however, are proposing to deepen it. Vessels of the largest tonnage are able, on the other hand, to load from the wharf of the International Mining Company at Sydney. To connect with the railway of this Company, a road of about two miles, or rather less, would have to be constructed from the Campbell Area. The Company, I am informed, undertake to carry coal and deliver on board vessels at their wharf in Sydney harbour, at a cost of 35 cents per ton.

6. *General conclusions.*—The preceding statements are sufficient in themselves to show that the coal property now under review is one of no ordinary value. The occurrence of the six feet Harbour seam beneath the entire area of the location, at easily accessible depths, does not admit of the slightest doubt; and it is equally certain that this valuable seam of coal is underlaid by others of corresponding value. The coal from the Harbour seam is of excellent quality for domestic use and for the manufacture of illuminating gas, as well as for metallurgical operations in which a long flame is more especially required. There can be no doubt that a ready market would be obtained both in Montreal and in British ports for all that could be raised. From careful inquiries and observation, I find that coal can be raised and shipped from the Cape Breton Mines at an average cost not exceeding a dollar and a-half per ton. The shipping price until recently was about two and a-half dollars per ton, but it now averages three or even three and a-quarter dollars, and there is an evident tendency throughout the district to an increased rise in price. I have no hesitation, therefore, in expressing my con-

viction that, if the Campbell Area be worked under judicious management, it cannot fail to yield very remunerative returns for the capital invested in its purchase and development.

I have the honour to be, Sir,

Your obedient servant,

E. J. CHAPMAN, PH. D.,

Professor of Mineralogy and Geology in University College, Toronto, and Consulting Mining Engineer.

TORONTO, July 10th, 1873.

In concluding this Report, I beg to express my obligations to Mr. R. N. Macdonald and Captain P. Nevill of the International Company's Mines for their kindness in allowing me free access to their underground workings, and for information respecting the same. I am also indebted to Mr. Archbold, and to the able Superintendent of the Little Glace Bay Mines for similar favours.—E. J. C.